

Measuring the Readability of the Chronicles of Narnia

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ナルニア国年代記物語のリーダビリティ

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水 谷 一 郎

Ichiro MIZUTANI

I Introduction

C. S. Lewis wrote seven fantastic stories of Narnia for children in his fifties: *The Lion, the Witch and the Wardrobe* (written in 1950)¹⁾, *Prince Caspian* (1951)²⁾, *The Voyage of the Dawn Treader* (1952)³⁾, *The Silver Chair* (1953)⁴⁾, *The Horse and His Boy* (1954)⁵⁾, *The Magician's Nephew* (1955)⁶⁾, and *The Last Battle* (1956)⁷⁾. The adventures of the seven chronicles of Narnia have been enjoyed by many children throughout the world.

Lewis indicated to readers that the world of Narnia was only for children in the following statement by Peter in *Prince Caspian*:

“Yes — that and other things,” said Peter, his face very solemn. “I can’t tell it to you all. There were things he wanted to say to Su and me because we’re not coming back to Narnia....He says we’re getting too old.”

There is also the same indication in Aslan’s words to Edmund and Lucy in *The Voyage of the Dawn Treader*:

“Dearest,” said Aslan very gently, “you and your brother will never come back to Narnia.”

“Oh, Aslan!!” said Edmund and Lucy both together in despairing voices.

“You are too old, children,” said Aslan, “and you must begin to come close to your own world now.”

What age of children, however, did Lewis have in mind when he wrote these chronicles? The following are the brief descriptions of each Narnia story, including those parts where Lewis gave hints about the children’s ages.

In *The Lion, the Witch and the Wardrobe*, the main characters are the four Pevensie children of England, Peter, Susan, Edmund and Lucy, who went into Narnia and fought against the White Witch with Aslan. Peter is the eldest, Susan the next eldest, and Edmund is one year older than Lucy.

Also in *Prince Caspian*, Peter, Susan, Edmund and Lucy were called to Narnia when they were on their way to boarding schools one year later. Lucy was going to a boarding

school for the first time. They helped Prince Caspian to restore Narnia.

In *The Voyage of the Dawn Treader*, three of the main characters were Edmund, Lucy and Eustace Clarence Scrub. Peter was busy studying hard with Professor Kirke during the holidays for an exam, and Susan was to go to America with their parents.

In *Silver Chair*, Eustace and his classmate Jill Pole were brought into Narnia by Aslan one year after the adventure of *The Voyage of the Dawn Treader*. Their mission was to search for and rescue Narnian Prince Rilian.

The Horse and his Boy has different kinds of characters: a talking horse of Narnia and a boy in the world of Narnia, not from this world. This is the story of their journey from the cruel land of Calormen to Archenland.

In *The Magician's Nephew*, Polly and Digory from this world saw the creation of Narnia by Aslan.

In *The Last Battle*, the adventure took place more than one year after *Silver Chair*, Polly and Digory, Peter, Edmund and Lucy, and Eustace and Jill were all called into Narnia, and they saw the end of the World of Narnia.

Some clues as to the ages of the children have been given in descriptions of Peter, Susan, Edmund and Lucy. We know that Peter was the eldest and Lucy the youngest of the four siblings, and that Edmund was one year older than Lucy. In *Prince Caspian*, Lucy was just about to go to a boarding school. This means that she must have been about eight years old at that time, because, a traditional boarding school (junior school) in England accepts children at the age of eight. Children in such schools take exams for senior schools at the age of about thirteen. Thus, Peter must have been about thirteen years old in *The Voyage of the Dawn Treader*.

Based on the above information, the ages of the other children can be estimated. In *The Lion, the Witch and the Wardrobe*, Peter would have been eleven years old, Lucy seven, Edmund eight, and Susan nine or ten. In other words, the children were all between seven and eleven years old. Children of this age range can easily identify with these heroes and heroines and enjoy the stories.

II Purpose

The purpose of this study was to assess the readability levels of the seven chronicles of Narnia by using Fry's Readability Formula⁸⁾ and Fry's Readability Graph⁹⁾. The definition of "readability" in this paper is ease of reading. Thus, to assess the level of readability of a book means to estimate the level of ease with which a reader is going to read and understand what has been written.¹⁰⁾

As was mentioned in the introduction, the ages of the four Pevensie children in *The Lion, the Witch and the Wardrobe* were between seven (Lucy) and eleven (Peter).

If Lewis considered the chronicles of Narnia to be suitable reading for children of the same ages as the heroes and heroines of his stories, the author hypothesized that the readability level of the seven chronicles of Narnia is between the level of second graders (7 years old) and sixth graders (11 years old).

III Methods

Two series of American textbooks that are available at our college library were used to assess and compare the readability levels of the seven books of Narnia: Reading Program books of Harcourt Brace Jovanovich from level 1 to level 14, and eight books for human development, "Health for Life" books from grade 1 to grade 8.^{11)~32)}

Fry's Readability Formula and Fry's Readability Graph

Fry's readability formula is an easy method for estimating the reading difficulty of material in English:

Directions for using the formula are as follows:

- 1) Select three 100-word passages from near the beginning, middle, and end of the book.
- 2) Count the total number of sentences in each 100-word passage (estimating to the nearest tenth of a sentence).

Calculate the average from these three numbers (add together and divide by three).

- 3) Count the total number of syllables in each 100-word sample.
- 4) Plot on a graph the average number of sentences per hundred words.

Readability scores indicate approximately how easily readers can understand reading materials (Fry, 1968, 1969).

IV Results

Tables 1-3 show the raw scores of 'average number of sentences per 100 words' and 'average number of syllables per 100 words' for each book investigated. Figure 1 was drawn by plotting the scores of each average number of sentences and average number of syllables per hundred words for each book in Table 1-3. The books of Narnia are indicated by ★ symbols, the 14 books of the HBJ Reading Program by ● symbols, and 8 books of Human Development (from grade 1 to grade 8) by ▲ symbols.

The results were as follows:

1. Textbooks of HBJ Reading Program (Levels 1-14)

Five books, levels 1 to 5, were assessed as being grade 1 level of difficulty. Levels 1 to 3 textbooks consisted mainly of one-syllable words and about 11 to 14 sentences in each 100-word passage. The levels of difficulty of the remaining textbooks (levels 6-14), except for levels 11 and 14, became higher as the text level advanced.

2. Textbooks of Human Development, Health for Life (Grades 1-8)

Each book in this series became more difficult with grade. In other words, longer words and sentences were used as the level of the textbooks became higher. More longer words appear in this series than in the other books examined in this study.

3. The Seven Chronicles of Narnia

The Lion, the Witch and the Wardrobe, *The Silver Chair*, and *The Magician's Nephew* were assessed to be grade seven, while *The Last Battle*, *Prince Caspian* and *The Voyage of the Dawn Treader* were assessed to be grade eight. Compared with the other chronicles, *The Voyage of the Dawn Treader* includes more longer words. *The Horse and His Boy*, which has many long sentences was assessed to be grade nine.

V Discussion

To interpret Fry's graph correctly, attention should be given to the ranges of word length and sentence length on the syllable scale (horizontal line) and word scale (vertical line), respectively. English passages made up of short sentences with short words (words with few syllables) are very easy to read, whereas passages made up of long sentences with long words (words with many syllables) are difficult to read.

One-syllable words, except for those used in newspaper or magazine articles for space-saving purposes, are generally easy words that children in low grades use in daily conversation. The number of words used in textbooks gradually increases as children progress to higher grades. Sentence length also increases. First graders use short sentences because they haven't learned the use of conjunctions or relative pronouns.

1. Textbooks of HBJ Reading Program (Levels 1-14)

Readability scores of levels 1 and 2 are out of range of the graph. In level 1 and level 2, the numbers of words with more than two syllables out of 300 words are less than 10 and 20, respectively. In other words, long words are rarely used in those textbooks. The average word length is in the middle or lower level. Moreover, most of the sentences in those textbooks are short.

Since all of these textbooks are intended for elementary school level, there are no "long words" or "long sentences" in any of these books.

2. Textbooks of Human Development, Health for Life (Grades 1-8)

Grades 1 and 7 textbooks agreed with the grade levels shown in Fry's graph, but the other textbooks were each one grade higher than the grade levels in Fry's graph. In general, though, the textbooks became more difficult as the grade advances. Only grade 8 was in the "long words" range.

As was the case with the Reading Program textbooks, none of these textbooks were in the range of "long words and long sentences."

3. The Seven Chronicles of Narnia

While the words used in the books of Narnia were not in the "long words" range, the sentences were in the range of "long sentences." This implies that, despite the use of long sentences, C.S. Lewis chose words suitable for children.

The author hypothesized that the readability of the seven chronicles of Narnia is between the levels of second grade (7 years old) and sixth grade (11 years old), on the basis of estimated ages of the heroes and heroines in *The Lion, the Witch and the Wardrobe*: Lucy (7 years old), Edmund (8), Susan (9 or 10), and Peter (11). Thus, when Lewis wrote these books, he was no doubt conscious of the ages of readers who could most easily identify themselves with the main characters and would therefore have the greatest enjoyment from reading and the best understanding of his books.

However, the results showed that the readability levels of the seven books of Narnia were higher than expected.

VI Conclusion

The results of this study did not support the author's hypothesis that the readability level of the chronicles of Narnia is for children of ages seven to eleven. The reason for this is thought to be that each writer, including C. S. Lewis, creates his or her unique world of children according to the image each writer has of children, and therefore the speech used by children in the writer's book might be different from that in the real world. Lewis, however, seems to have paid special attention to the use of words; his books were written with short words, which would make it easier for children to read and understand his books.

Despite the discrepancy with the author's hypothesis, the results of this study are useful in that they have provided data on the readability levels of the seven chronicles of Narnia (grades 7 to 9) according to Fry's Readability Graph and Formula. Data on the readability levels of other children's stories would be useful for English teachers.

The results of readability levels of the Human Development textbooks and Reading

Program textbooks suggest that Fry's Readability Formula gives a more accurate assessment of non-fiction works/textbooks than literary works. Further studies on a wide range of textbooks are needed to confirm this.

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Table 1 Results of Calculation of Readability

Title of Book		Sentences in 100 Words	Syllables in 100 Words
The Lion, the Witch and the Wardrobe (LWW)	100 words at the beginning	4.6	133
	100 words in the middle	7.0	129
	100 words at the end	4.5	123
	average	5.4	128.3
Prince Caspian (PC)	100 words at the beginning	3.7	129
	100 words in the middle	4.2	134
	100 words at the end	4.1	135
	average	4.0	132.7
The Voyage of the Dawn Treader (VD)	100 words at the beginning	7.5	157
	100 words in the middle	4.6	137
	100 words at the end	5.7	136
	average	5.9	143.3
The Silver Chair (SC)	100 words at the beginning	6.0	124
	100 words in the middle	5.2	122
	100 words at the end	4.6	132
	average	5.3	126.0
The Horse and His Boy (HB)	100 words at the beginning	3.5	128
	100 words in the middle	5.4	153
	100 words at the end	3.5	135
	average	4.1	138.7
The Magicain's Nephew (MN)	100 words at the beginning	5.3	136
	100 words in the middle	5.1	131
	100 words at the end	4.4	132
	average	4.9	133.0
The Last Battle (LB)	100 words at the beginning	3.6	121
	100 words in the middle	4.6	133
	100 words at the end	5.1	140
	average	4.4	131.3
New Friends (L1) HBJ Reading Program Level 1	100 words at the beginning	15.2	100
	100 words in the middle	13.4	103
	100 words at the end	14.3	107
	average	14.3	103.3
Mortimer Frog (L2) HBJ Reading Program Level 2	100 words at the beginning	11.6	100
	100 words in the middle	14.2	115
	100 words at the end	14.7	105
	average	13.5	106.7
Mr. Fig (L3) HBJ Reading Program Level 3	100 words at the beginning	11.9	113
	100 words in the middle	12.2	116
	100 words at the end	9.6	100
	average	11.2	109.7
Wishes (L4) HBJ Reading Program Level 4	100 words at the beginning	9.2	114
	100 words in the middle	22.0	113
	100 words at the end	11.7	119
	average	14.3	115.3
Smiles (L5) HBJ Reading Program Level 5	100 words at the beginning	11.6	116
	100 words in the middle	16.8	124
	100 words at the end	11.3	110
	average	13.2	116.7

Table 2 Results of Calculation of Readability

Title of Book		Sentences in 100 Words	Syllables in 100 Words
Streamers (L6) HBJ Reading Program Level 6	100 words at the beginning	6.6	120
	100 words in the middle	13.7	127
	100 words at the end	10.3	120
	average	10.2	122.3
Stairways (L7) HBJ Reading Program Level 7	100 words at the beginning	14.4	131
	100 words in the middle	8.0	136
	100 words at the end	11.3	130
	average	11.2	132.3
Sunbeams (L8) HBJ Reading Program Level 8	100 words at the beginning	6.5	125
	100 words in the middle	9.4	121
	100 words at the end	9	134
	average	8.3	126.7
Telescopes (L9) HBJ Reading Program Level 9	100 words at the beginning	8.3	129
	100 words in the middle	7.2	124
	100 words at the end	11.8	146
	average	9.1	133.0
Archways (L10) HBJ Reading Program Level 10	100 words at the beginning	10.6	130
	100 words in the middle	11.0	157
	100 words at the end	7.4	133
	average	9.7	140.0
Landmarks (L11) HBJ Reading Program Level 11	100 words at the beginning	7.4	130
	100 words in the middle	6.9	125
	100 words at the end	10.6	133
	average	8.3	129.3
Portraits (L12) HBJ Reading Program Level 12	100 words at the beginning	5.5	130
	100 words in the middle	8.4	131
	100 words at the end	5.0	153
	average	6.3	138.0
Perspectives (L13) HBJ Reading Program Level 13	100 words at the beginning	4.9	153
	100 words in the middle	4.8	141
	100 words at the end	7.7	120
	average	5.8	138.0
Reflections (L14) HBJ Reading Program Level 14	100 words at the beginning	7.3	135
	100 words in the middle	3.3	146
	100 words at the end	6.6	124
	average	5.7	135.0
Health for Life Grade 1 (H1)	100 words at the beginning	19.2	118
	100 words in the middle	17.1	114
	100 words at the end	15.0	131
	average	17.1	121.0
Health for Life Grade 2 (H2)	100 words at the beginning	18.5	128
	100 words in the middle	10.3	144
	100 words at the end	11.5	120
	average	13.4	130.7
Health for Life Grade 3 (H3)	100 words at the beginning	11.3	135
	100 words in the middle	13.9	146
	100 words at the end	9.3	126
	average	11.5	135.7

Table 3 Results of Calculation of Readability

Title of Book		Sentences in 100 Words	Syllables in 100 Words
Health for Life Grade 4 (H4)	100 words at the beginining	9.4	136
	100 words in the middle	9.0	136
	100 words at the end	7.1	133
	average	8.5	135.0
Health for Life Grade 5 (H5)	100 words at the beginining	10.7	123
	100 words in the middle	10.6	148
	100 words at the end	6.8	154
	average	9.4	141.7
Health for Life Grade 6 (H6)	100 words at the beginining	9.3	123
	100 words in the middle	7	156
	100 words at the end	6.4	149
	average	7.6	142.7
Health for Life Grade 7 (H7)	100 words at the beginining	6.5	153
	100 words in the middle	9.0	158
	100 words at the end	8.9	135
	average	8.1	148.7
Health for Life Grade 8 (H8)	100 words at the beginining	8.3	148
	100 words in the middle	6.0	153
	100 words at the end	5.7	157
	average	6.7	152.7

GRAPH FOR ESTIMATING READABILITY

by Edward Fry, Rutgers University Reading Center,
New Brunswick, New Jersey

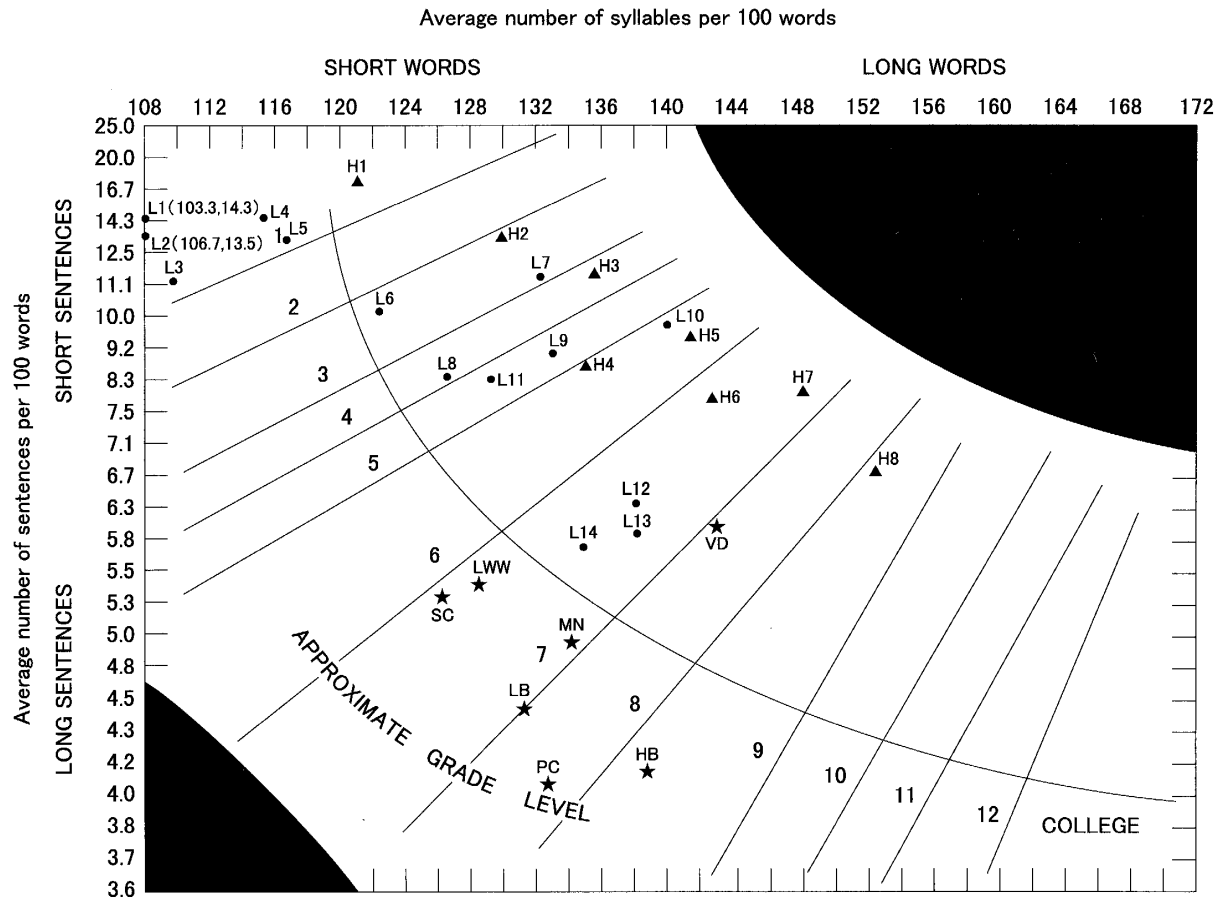


Figure 1. Readability Graph of the Seven Chronicles of Narnia and American Textbooks

★: Books of Narnta, ●: Books of Reading Program, ▲: Books of Human Development